The Synapse: Intercollegiate science magazine

Volume 8 | Issue 1 Article 15

2016

BPA Here, There, Everywhere

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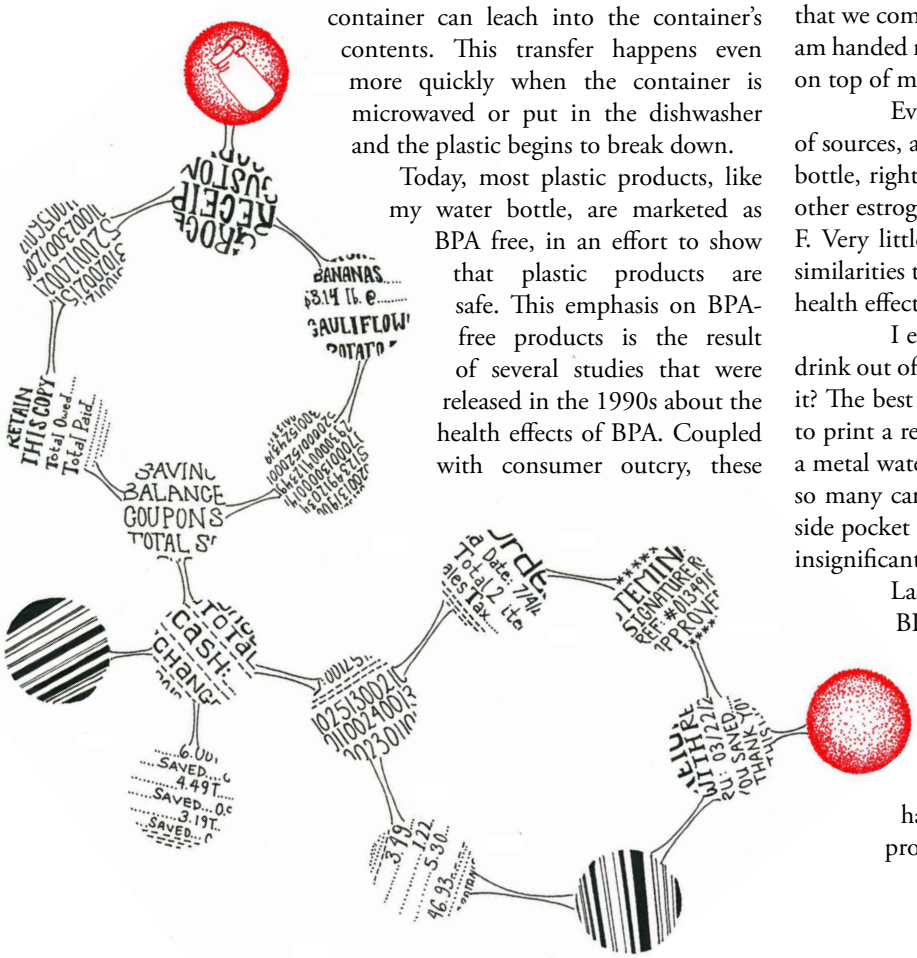
When my mom bought me a Nalgene water bottle a few years ago, I left the BPA-free sticker it came with on the side. It stayed there for the next few years even after the sticker turned brown from exposure to farm summer camps and the daily grime of high school. I was too lazy to take it off and the sticker seemed to make my bottle a novelty – older water bottles didn't have a sticker like mine. But even though I was proud of my sticker, I didn't know what BPA was.

BPA stands for Bisphenol A, which was used to make plastics starting in the 1960s. BPA was and is in almost every plastic product because it is used to make polycarbonate plastic, a plastic that is both clear and tough. But BPA is also an endocrine disruptor, a xenoestrogen, known to have negative impacts on human health. As a xenoestrogen, BPA mimics a naturally occurring hormone in your body, estrogen. A xenoestrogen, like BPA, can disrupt the synthesis, metabolism, and binding of estrogens naturally present in your body. Estrogen plays a key role in the body, in everything from puberty to bone development, which means that a xenoestrogen can wreak havoc. Because of its role as a xenoestrogen, BPA has been declared a developmental and reproductive toxicant for adults and children.

Why should BPA in a plastic container impact the safety of its contents? It shouldn't, but BPA from the container can leach into the container's contents. This transfer happens even more quickly when the container is microwaved or put in the dishwasher and the plastic begins to break down.



Today, most plastic products, like my water bottle, are marketed as BPA free, in an effort to show that plastic products are safe. This emphasis on BPA-free products is the result of several studies that were released in the 1990s about the health effects of BPA. Coupled with consumer outcry, these studies ultimately led to the banning of BPA in baby products starting in 2008 and led many producers to phase out BPA from their products.

So I don't have to worry about BPA exposure; my water bottle is BPA free, right? Wrong. BPA is still used to coat the inside of cans and other food packaging materials. BPA is also in a product that we all come into daily contact with – receipts. Thermal receipt paper, the kind found in almost every cash register, uses BPA as a developer to make the print visible. A study published in *Plos One* in 2014 showed that handling receipts results in a spike in BPA blood and urine levels. In the study, researchers replicated a scenario that frequently plays out at a fast food restaurants: subjects were instructed to use hand sanitizer, handle receipts and eat French fries. When subjects used hand sanitizer before handling receipts they had higher levels of BPA present on their hands and in their blood compared to subjects who handled the receipts with dry hands. Hand sanitizer led to higher BPA exposure because some types of hand sanitizer and lotions contain dermal penetration enhancing chemicals, chemicals that increase the absorption of lipophilic or lipid dissolving compounds, such as BPA. Another study in *Environmental Science and Technology* showed that individuals with high occupational exposure to BPA (e.g. waiters or sales clerks) had higher levels of BPA in urine than workers not in those industries. Clearly, avoiding BPA isn't as simple as buying a new water bottle. It is present in a variety of different products that we come into contact with every day. The receipt I am given before I am handed my lunch or the receipt the teller puts in the grocery bag, right on top of my family's food, has BPA on it. BPA seems to be unavoidable.

Even though I come into contact with BPA through a variety of sources, at least I'm not ingesting a xenoestrogen when I use my water bottle, right? Wrong again. Many "BPA-Free" products actually contain other estrogen-mimicking compounds such as Bisphenol S or Bisphenol F. Very little is known about BPS and BPF, but given their structural similarities to BPA many scientists believe they may have similar negative health effects.

I encounter BPA everywhere, everyday. It's in the water bottle I drink out of and the receipts I am given at every store. So how can I avoid it? The best way to avoid BPA is to be an informed consumer. I opt not to print a receipt or to have the receipt sent by email. And I switched to a metal water bottle. My old Nalgene water bottle that came with me to so many camps and followed me through high school doesn't sit in the side pocket of my backpack anymore. Although these changes may seem insignificant, I've at least lowered my exposure.

Lastly when producers learn that customers prefer a product BPA, BPS or BPF-free product, some of them respond. Recently, a local grocery store in my hometown switched from using thermal receipt paper with BPA to one without it. That means when my family gets groceries the receipt the teller puts in the bag, right on top of our food, doesn't get BPA all over the food. Although the chain stores in the area haven't switched yet, I'm hopeful. One grocery store's switch proves that consumers and producers have a voice.